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Tribological properties of commercially pure copper with different microstructures, in contact with a graphitic material

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Abstract

© 2015, Allerton Press, Inc. In the present work, we report the results of tribological studies on commercially pure copper (Cu 99.9%) in contact a with graphitic material. The samples under study were made with two types of micro-structures, i.e., a coarse-grained (CG) microstructure with an average grain size of 20–60 μm after annealing and a submicrocrystalline (SMC) microstructure with an average grain size of 0.22 μm after severe plastic deformation (SPD) processing through equal-channel angular pressing (ECAP) via the Conform scheme. It has been shown that the SMC samples after ECAP-Conform processing reveal friction coefficients 12–20% lower than in the case of the annealed coarse-grained (CG) sample.

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Keywords

commercially pure copper, microstructure, severe plastic deformation, tribological properties